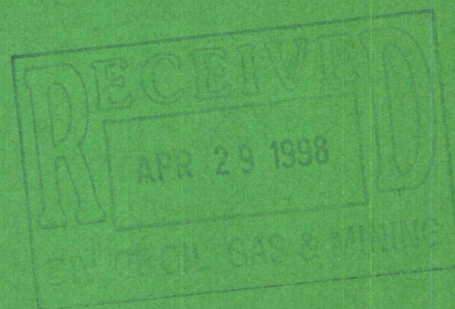


M/023/042

NOTICE OF INTENTION
LARGE MINING OPERATIONS
B.E.G. RESOURCES
TRAVERTINE I MINE

April 27, 1998



B.E.G. RESOURCES
PO Box 361
Nephi, Utah 84648

STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY
288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870 (801)538-6146

STATE OF UTAH
NOI FORM

Notice of Intent (NOI) for Coverage Under the UPDES General Multi-Sector Storm Water Permit for Discharges Associated with Industrial Activity, Permit No. UTR000000. INSTRUCTIONS ON BACK PAGE

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a UPDES permit issued for storm water discharges associated with industrial activity in the State of Utah. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM. A different NOI form is provided for construction activities disturbing over 5 acres.

I. FACILITY OPERATOR INFORMATION

Name: B | E | G | R | E | S | O | U | R | C | E | S | L | L | C | Phone: 8 | 0 | 1 | 7 | 5 | 4 | 5 | 2 | 0 | 0 |
Address: P | O | B | O | X | 3 | 6 | 1 | Status of Owner/Operator: P
City: N | E | P | H | I | State: U | T | Zip: 8 | 4 | 6 | 4 | 8 |
Facility Contact Person: N | E | A | L | J | E | W | S | E | W | Phone: 8 | 0 | 1 | 7 | 5 | 4 | 5 | 2 | 0 | 0 |
Facility Contact Person Title: M | A | N | A | G | I | N | G | P | A | R | T | N | E | R |

II. FACILITY SITE/LOCATION INFORMATION

Name: T | R | A | V | E | R | T | I | N | E | # | 1 | M | I | N | E |
Address: _____ County: J | U | A | B |
City: _____ State: U | T | Zip: _____
Latitude: _____ Longitude: _____ Quarter: S | E | Section: 1 | 4 | Township: 1 | 4 | Range: 3 | W |
Site Contact Person: N | E | A | L | J | E | W | S | E | W | Phone: 8 | 0 | 1 | 7 | 5 | 4 | 5 | 2 | 0 | 0 |
Site Contact Person Title: M | A | N | A | G | I | N | G | P | A | R | T | N | E | R |

Is the facility located on Indian Lands?

(Y or N)

N

III. SITE ACTIVITY INFORMATION

Name of Municipality which Operates the Storm Sewer System: N | O | N | E |
Receiving Water Body: S | E | V | I | E | R | R | I | V | E | R |

	Yes	No
Is there existing quantitative storm water discharge data?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the facility required to do analytical monitoring? (See permit conditions Part V. and Sector monitoring requirements.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the facility required to do visual monitoring? (See permit conditions near the end of applicable Sector(s); Appendix A to AD)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the facility required to submit monitoring data or retain it on site?	(Submit) <input type="checkbox"/>	(Retain on site) <input checked="" type="checkbox"/>
Is This a New Facility, or is it an Existing Facility?	(New) <input checked="" type="checkbox"/>	(Existing) <input type="checkbox"/>

If This is an Existing Facility, and the Start-up Date was After Oct. 1992, Please Fill in the Start-up Month: Month (Jan, Feb., etc.): _____ Year: _____

SIC or Designated Activity Code: Primary: _____ 2nd: _____ 3rd: _____ 4th: _____

If You Have Other Existing UPDES Permits, Enter Permit #'s: _____

IV. SECTOR IDENTIFICATION: The General Multi-Sector Permit covers all industrial activity that is required by law to be covered by a storm water permit. On the following pages the sectors are listed with a description of the industrial activity that is covered by that sector. Please check each sector that covers industrial activities which occur at your site. The sector covered in Appendix AD is the catch-all sector and should only be used if positively no other sector covers your industrial activity. If you should select AD, please call the Storm Water Coordinator at DWQ to discuss the need for choosing Sector AD (Non-Classified Facilities).

on the site of such operations." Industries in SIC Major Group 13 include the extraction and production of crude oil, natural gas, oil sands and shale; the production of hydrocarbon liquids and natural gas from coal; and associated oil field service, supply and repair industries. This section also covers petroleum refineries listed under SIC code 2911. Contaminated storm water discharges from petroleum refining or drilling operations that are subject to nationally established BAT or BPT guidelines found at 40 CFR 419 and 435 respectively are not included. [Note that areas eligible for coverage at petroleum refineries will be very limited because the term "contaminated runoff," as defined under 40 CFR 419.11, includes "... runoff which comes into contact with any raw material, intermediate product, finished product, by-product or waste product located on petroleum refinery property." Areas at petroleum refineries which may be eligible for permit coverage, provided discharges from these areas are not co-mingled with "contaminated runoff," include: vehicle and equipment storage, maintenance and refueling areas. Most areas at refineries will not be eligible for coverage including: raw material, intermediate product, by-product, waste material, chemical, and material storage areas; loading and unloading areas; transmission pipelines, and, processing areas.] Not covered are: inactive oil and gas operations occurring on Federal lands where an operator cannot be identified are not covered by this permit.

☒ **J. Mineral Mining and Processing Facilities** – active and inactive mineral mining and processing facilities (generally identified by Standard Industrial Classification (SIC) Major Group 14). Not covered are: 1) facilities associated with industrial activity which are subject to an existing effluent limitation guideline (40 CFR Part 436), 2) inactive mineral mining activities occurring on Federal lands where an operator cannot be identified are not eligible for coverage under this permit.

☐ **K. Hazardous Waste Treatment Storage or Disposal Facilities** – facilities that treat, store, or dispose of hazardous wastes, including those that are operating under interim status or a permit under subtitle C of RCRA. [Disposal facilities that have been properly closed and capped, and have no significant materials exposed to storm water, are considered inactive and do not require permits (UAC R317-8-3.8(6)(c)).]

☐ **L. Landfills and Land Application Sites** – waste disposal at landfills, land application sites, and open dumps that receive or have received industrial wastes. Open dumps are solid waste disposal units that are not in compliance with State/Federal criteria established under RCRA Subtitle D. Not covered are: inactive landfills, land application sites, and open dumps occurring on Federal lands where an operator cannot be identified.

☐ **M. Automobile Salvage Yards** – facilities engaged in dismantling or wrecking used motor vehicles for parts recycling or resale and for scrap (SIC Code 5015).

☐ **N. Scrap Recycling and Waste Recycling Facilities** – facilities that are engaged in the processing, reclaiming and wholesale distribution of scrap and waste materials such as ferrous and nonferrous metals, paper, plastic, cardboard, glass, animal hides (these types of activities are typically identified as SIC code 5093). Facilities that are engaged in reclaiming and recycling liquid wastes such as used oil, antifreeze, mineral spirits, and industrial solvents (also identified as SIC code 5093) are also covered under this section. Separate permit requirements have been established for recycling facilities that only receive source-separated recyclable materials primarily from non-industrial and residential sources (also identified as SIC 5093) (e.g., common consumer products including paper, newspaper, glass, cardboard, plastic containers, aluminum and tin cans). This includes recycling facilities commonly referred to as material recovery facilities (MRF).

☐ **O. Steam Electric Power Generating Facilities** – steam electric power generating facilities, including coal handling areas. Non-storm water discharges subject to effluent limitations guidelines are not covered by this permit. Storm water discharges from coal pile runoff subject to numeric limitations are eligible for coverage under this permit, but are subject to the limitations established by 40 CFR 423. Not covered are: ancillary facilities such as fleet centers, gas turbine stations, and substations that are not contiguous to a steam electric power generating facility are not covered by this permit. Heat capture co-generation facilities are not covered by this permit; however, dual fuel co-generation facilities are included.

☐ **P. Vehicle Maintenance or Equipment Cleaning areas at Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities** – ground transportation facilities and rail transportation facilities (generally identified by Standard Industrial Classification (SIC) codes 40, 41, 42, 43, and 5171), that have vehicle and equipment maintenance shops (vehicle and equipment rehabilitation, mechanical repairs, painting, fueling and lubrication) and/or equipment cleaning operations are eligible for coverage under this section. Also covered under this section are facilities found under SIC code 4221-4225 (public warehousing and storage) that do not have vehicle and equipment maintenance shops and/or equipment cleaning operations but have areas (exclusive of access roads and rail lines) where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products or industrial machinery are exposed to storm water.

☐ **Q. Vehicle Maintenance Areas and Equipment Cleaning Areas of Water Transportation Facilities** – water transportation facilities that have vehicle (vessel) maintenance shops and/or equipment cleaning operations. The water transportation industry includes facilities engaged in foreign or domestic transport of freight or passengers in deep sea or inland waters; marine cargo handling operations; ferry operations; towing and tugboat services; and marinas (facilities commonly identified by SIC code Major Group 44).

☐ **R. Ship or Boat Building and Repair Yards** – facilities engaged in ship building and repairing and boat building and repairing (SIC code 373).

☐ **S. Vehicle Maintenance Areas, Equipment Cleaning Areas or From Airport Deicing Operations located at Air Transportation Facilities** – establishments and/or facilities including airports, air terminals, air carriers, flying fields, and establishments engaged in servicing or maintaining airports and/or aircraft (generally classified under Standard Industrial Classification (SIC) code 45) which have vehicle maintenance shops, material handling facilities, equipment cleaning operations or airport and/or aircraft deicing/anti-icing operations. For the purpose of this permit, the term "deicing" is defined as the process to remove frost, snow, or ice and "anti-icing" is the process which prevents the accumulation of frost, snow, or ice. Only those portions of the facility or establishment that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or deicing/anti-icing operations are addressed under this section.

☐ **T. Wastewater Treatment Works** – treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility with a design flow of 1.0 MGD or more, or required to have an approved pretreatment program under 40 CFR Part 403.

☐ **U. Food and Kindred Products Facilities** – food and kindred products processing facilities (commonly identified by Standard Industrial Classification (SIC) code 20), including: meat products; dairy products; canned, frozen and preserved fruits, vegetables, and food specialties; grain mill products; bakery products; sugar and confectionery products; fats and oils; beverages; and miscellaneous food preparations and kindred products and tobacco products manufacturing (SIC Code 21), except for storm water discharges identified under paragraph I.B.3. where industrial plant yards; material handling sites; refuse sites; sites used for application or disposal of process wastewaters; sites used for storage and maintenance of material handling equipment; sites used for residential treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; and storage areas for raw material and intermediate and finished products are exposed to storm water and areas where industrial activity has taken place in the past and significant materials remain. For the purposes of this paragraph, material handling activities include the storage, loading, and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product.

INSTRUCTIONS

NOTICE OF INTENT (NOI) FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY TO BE COVERED UNDER THE UPDES GENERAL PERMIT

WHERE TO FILE THE NOI FORM

NOIs, with fee payment(s), must be sent to the following address:

Department of Environmental Quality
Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114-4870

COMPLETING THE NOI FORM

You must type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions on this form, call (801) 538-6146.

BEGINNING OF COVERAGE

Storm Water General Permits are drafted to cover a facility quickly avoiding delays, therefore there is no waiting time to receive coverage. The permittee should be aware that though you may not have a permit in hand, if you have submitted a completed NOI with the permit fee you are covered by the permit and will be expected to conform to the conditions in the permit. If you wish you may contact the Division of Water Quality at (801) 538-6146, to receive a generic copy of the permit. After we receive the NOI and the permit fee we will send you an official copy of the permit including your specific permit number.

PERMIT FEES (MAKE CHECK PAYABLE TO: DIVISION OF WATER QUALITY)

The permit fee is \$500 (or is prorated) and it must be submitted with the NOI to authorize immediate coverage under the permit (except in the case of a state or local political subdivision which are exempt from the permit fee). This provides five years of coverage under the permit (unless prorated). It is our policy to prorate the permit fee for temporary charges. Fees are prorated at \$8.34 per month of coverage needed, except a \$50 minimum.

Permittees who have a new facility that have begun operating after October 1, 1992, will be prorated from the day they began operations until the expiration date of the General Permit.

GENERAL INFORMATION

Facilities within municipalities (such as Salt Lake City or Salt Lake County) that have been issued Municipal Storm Water Permits by DWQ must contact that city or the county and notify them of the new permit status for the facility. If you have questions that have not been answered above, or need an NOI for construction activities, please contact the Storm Water Coordinator, Division of Water Quality, at (801) 538-6146.

SECTION I - FACILITY OPERATOR INFORMATION

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same as the name of the facility. The responsible party is the legal entity that controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Enter the appropriate letter to indicate the legal status of the operator of the facility.

F = Federal M = Public (other than Fed or State)
S = State P = Private

Contact person is someone that we may contact, that has knowledge of the facility and its conditions, but not necessarily the person with signatory responsibility.

SECTION II - FACILITY/SITE LOCATION INFORMATION

Enter the facility's or site's official or legal name and complete street address, including state and ZIP code. If the facility or site lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quarter, section, township, and range (to the nearest quarter section) of the approximate center of the site. Indicate whether the facility is located on Indian Lands. If the facility is located on Indian Lands, EPA form 3510-6 should be used and submitted to EPA Region VIII except for facilities on the Navajo Reservation or on the Goshute Reservation which should submit EPA form 3510-6 to Region IX.

SECTION III - SITE ACTIVITY INFORMATION

For storm water discharges to a municipal separate sewer system, enter the name of the creator of the municipality (e.g., municipality name, county name) and the receiving water to the discharge from the municipal storm sewer if it is known. (A municipal separate sewer system (MS4) is defined as a conveyance or system of conveyances (including with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-

made channels, or storm drains) that is owned or operated by a state, city, town, county, district, association or other public body which is designed or used for collecting or conveying storm water).

If the facility discharges storm water directly to receiving water(s), enter the name of the receiving water.

Indicate whether or not the owner or operator of the facility has existing quantitative data that represent the characteristics and concentration of pollutants in storm water discharges.

To answer the questions concerning analytical or visual monitoring you must examine a copy of the permit, Part V, and the sectors (in the appendix) that your facility will fall into. Upon examination you will be able to determine your monitoring and reporting (whether data must be submitted or retained in a storm water pollution prevention plan file) requirements.

A facility is an existing facility if it has been in operation, it is a new facility if it has not begun operation but is about to

List, in descending order of significance, up to four 4-digit standard industrial classification (SIC) codes that best describe the principal products or services provided at the facility or site identified in Section II of the application.

For industrial activities defined in UAC 317-8-3.8(6)(c) & (d) 1 to 11, that do not have SIC codes that accurately describe the principal products produced or services provided, the following 2-character codes are to be used:

HZ = Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA [UAC R317-8-3.8(6)(d)4.];
LF = Landfills, land application sites, and open dumps that receive or have received any industrial wastes, including those that are subject to regulation under subtitle D of RCRA [UAC R317-8-3.8(6)(d)5.];
SE = Steam electric power generating facilities, including coal handling sites [UAC R317-8-3.8(6)(d)7.];
TW = Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage [UAC R317-8-3.8(6)(d)9.].

If there are other UPDES permits presently issued for the facility or site listed in Section II, list the permit numbers. If an application for the facility has been submitted but no permit number has been assigned, enter the application number.

SECTION IV - SECTOR IDENTIFICATION

Select and check all the boxes indicating the sectors that describe activities that occur at the site described in section II.

SECTION V - CERTIFICATION

State statutes provide for severe penalties for submitting false information on this application form. State regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

NOTICE OF INTENTION
LARGE MINING OPERATIONS
B.E.G. RESOURCES
TRAVERTINE I MINE

April 27, 1998

B.E.G. RESOURCES
PO Box 361
Nephi, Utah 84648

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1.0 Introduction

This document is being submitted by B.E.G. Resources (BR) in compliance with R647-4-103, Notice of Intention (NOI) to Commence Large Mining Operations.

1.1 Owner Information

The property to be mined is public domain, controlled by the Bureau of Land Management (BLM). A location map of the subject property is provided in Appendix A. The owners of record of the minerals to be mined are as follows:

<u>Name</u>	<u>Address</u>
Robert Steele	1055 N 400 E Nephi, UT 84648
Max Steele	296 N Center Santaquin, UT 84655
Terry Steele	PO Box 353 Santaquin, UT 84655

1.2 Operator Information

The operator of the mine is as follows:

B.E.G. Resources
PO Box 361
Nephi, UT 84628

Contact Person: Neal Jensen, Managing Partner
Phone: (801) 754-5200
Fax: (801) 754-5222

BR has obtained lease agreements with the mineral owners of record (Section 1.1).

2.0 Property Location and Access

The Travertine #1 is located in the SE 1/4 of Section 14, T14S, R3W, SLBM. It is located along Highway 132 approximately nineteen miles west southwest of Nephi, and nine miles northeast of Leamington. The location of the facility is shown in Appendix A. Proposed mining and processing operations are conducted approximately 400 to 600 feet northwest of Highway 132.

Access to the area to be mined is provided by previously constructed unimproved dirt roads. This road was the means of traveling to Leamington prior to construction of Highway 132. When Highway 132 was constructed, a cut was made through a hill allowing a better path for the highway than the original road, and regular use of road passing through what is now BR operations was discontinued. This road continued to have minimal use by: ranchers using the property for grazing; recreation; and; substantial use for fire fighting activities in 1996. The BR operations was used as a staging area for fire fighting activities during this event. Evidence of prior existence of this road is included in Appendix A, a photocopy of a USGS map, and in an aerial photograph in Appendix B. The road allows one way travel by haul trucks. The trucks may enter from Highway 132 east of the property, travel west and south along the road which gains in elevation to the mining/processing site where the trucks can be loaded, then continue travel southwest then south to enter Highway 132. An alternate haul truck route may be both entry and exit from the west Highway 132 connection.

3.0 Material to be Mined/Produced

The material to be mined is limestone. Products from operations will consist principally of 3/4" material produced through crushing/screening operations. This product is to be provided to Intermountain Power Service Corporation, a coal fired power plant located near Delta, as material to be used in SO₂ scrubbers.

Other products may include road base, sewer rock, and similar miscellaneous materials, however, the production and sale of these products is expected to be minimal.

4.0 Operation Plan

Operations to be conducted begin with the removal and stockpiling of topsoil from the proposed pit and operating areas. There is no overburden to be removed in any area. The area to be mined is a limestone outcropping and is the desired mineral.

Mining operations begin with the drilling of blast holes with an air track type drill. The blast holes will be loaded and the material blasted with a mixture of ammonium nitrate and fuel oil.

Once blasted, the material will be transported and fed to a crushing a screening plant through the use of a front end loader. The crushing and screening plant typically would consist of a jaw crusher, a double deck screen, a cone crusher, and various conveyors. Finished product stockpiles would be formed through the use of a radial stacker. Since only one principal product is desired, only one stockpile with appreciable volumes would be created.

Note that crushing screening operations are completed by a separate contractor. Actual crushing equipment may vary slightly depending on the contractor selected.

From the stockpile, material would be removed and loaded into haul trucks through the use of a front end loader.

There will be no acid forming materials created by operations or present on site.

5.0 Affected Areas

All operations conducted by BR for the Travertine #1 mine will affect areas previously mined or otherwise disturbed, and disturb new areas. Minor mining activity previously occurred at the Travertine #1 mine by previous operators. Evidence of the prior mining activities is shown in the aerial photograph included in Appendix B. BR proposes to expand the area previously mined and use the same access roads and utility road as existed prior to BR operations.

The pit area is an area which was previously disturbed, but which will be re-disturbed and expanded by BR. The expansion is necessary to mine material to the final pit limits. The total proposed pit area is 4.39 acres.

The operations area is the area where material processing will occur, products will be stored in stockpiles, and equipment will be operated to load haul trucks. The operation area is also the area where the topsoil and ore stockpiles are located. This operations area has been topsoiled and the topsoil has been stockpiled for replacement over the area. The access road passes through this operations area. The total area of the operations area is 3.27 acres, of which 0.14 acres (estimated 12 foot width) is the access road which existed prior to BR operations. Therefore, the operations area disturbed or re-disturbed by BR operations is 3.13 acres (3.27 - 0.14).

The access road is a road previously existing to BR operations. The access road is described in Section 2.0. Improvements to the road consists of placing road base material on the surface to minimize dust during dry conditions and to minimize muddiness during wet conditions. No other modifications will be made to the road. The total area of the access road which is used by BR operations is 2.56 acres (estimated 12 foot width, excluding portion which passes through the operations area).

In addition to the final pit area, a utility road on the southwest area of the operations and pit area will be used for equipment access to the pit and processing equipment. This road was previously existing to BR operations, and used extensively for fire fighting activities in 1996. Evidence of the prior existence of this road is shown in the aerial photograph included in Appendix B. The topsoil in the utility road does not require removal since no material will be mined from the area. However, this area is proposed to be revegetated, including ripping. The utility road is shown in Plate 1. The total area of this access road is 0.11 acres.

The following table summarizes the proposed areas to be affected by BR operations, and the areas proposed for reclamation.

**Table 5.1
Affected/Reclaimed Areas**

Feature	Affected Area (acres)	Topsoil Available and Removed?	Area Proposed for Reclamation/Revegetation (acres)
Pit	4.39	Yes	4.39
Operations Area (including stockpiles)	3.13	Yes	3.13
Access (Haul) Roads (includes portion which passes through operation area)	2.71	No	0
Utility Roads	0.11	No	0.11
Totals	10.34		7.63

6.0 Soils

6.1 Type of Soil

The soil types has been characterized by the Soil Conservation Service as types: LdE - Lodar-Rock outcrop complex, 3 to 30 percent slopes, and; LdF - Lodar-Rock outcrop complex, 30 - 70 percent slopes. Complete text describing the soil, and an aerial photograph of the area showing the location of the soil types, is included in included in Appendix B.

6.2 Plan for Protecting and Redepositing Topsoil

The only soils to be affected by operations are those in the pit and operations areas. These top soils are to be removed from a stockpile for future replacement in the these areas.

The topsoil thickness over the pit and operation areas is estimated at 2 to 3 inches thick. The topsoil has already been removed and stockpiled through the use of a dozer and a front end loader. The total volume of topsoil to be stockpiled and re-deposited is estimated at 2500 tons (2300 yds³).

7.0 Vegetation

7.1 Existing Vegetation

Existing vegetation surrounding the Travertine #1 Mine varies. Areas to the north and east were recently burned by wildfire in 1996. Areas to the south and southwest were not burned by the wildfire.

The BLM has conducted a re-seeding program of burned areas which were damaged by the massive fire in 1996. It is not clear if re-seeding was actually completed in areas immediately adjacent to the Travertine #1 mine, however, very good establishment of vegetation in the burned areas is evident. However, since these recently burned areas are not considered representative of vegetation that existed prior to disturbance of mining operations, BR is proposing to re-establish vegetation to a level of ground cover consistent with areas surrounding the pit which were not damaged by the wildfire.

The area identified as representative of pre-mining vegetation is immediately adjacent to the pit and operations area to the southwest. Plate 1 identifies this particular area. The vegetation in this area consists of some mosses which are only expected to be evident in the springtime, dense sage, cryptogam, scattered junipers, and some grasses. The area had a pre-mining use of grazing. It is believed that the grazing has depleted existing vegetative cover, particularly grasses, considerably. The total estimated ground cover in this representative area is estimated to range from 25-45%, with an average of 35%.

7.2 Plan for Re-establishing Vegetation

All re-depositing of top soils and revegetation activities will be conducted in the first spring following cessation of activities at the Travertine #1 mine.

A seed mix will be applied to the areas through the use of a seed drill or hand broadcasting. The following seed mix is proposed:

Table 7.1
Proposed Seed Mix

Common Name	Rate (lbs/acre)
Hycrest crested wheat grass	1.0
Intermediate wheatgrass	2.0
Western wheatgrass	2.0
Indian ricegrass	2.5
Palmer penstemon	0.5
Ladlac alfalfa	1.0
Yellow sweetclover	0.5
Scarlet globemallow	0.5
4-wing saltbrush	1.0
Shadscale	1.0
Rubber rabbitbrush	0.5
Forage kochia	0.5
Total	13.0

Revegetation will be re-established by first spreading topsoil over areas from which it was removed, applying a manure mulch at a rate of four to five tons per acre, ripping, then hand broadcasting the seed mix. It is estimated that ripping can be completed to a depth of 18 inches because much of the material underlying the topsoil will be loose from regrading as well as naturally occurring.

The proposed seed mix was recommended for the Travertine #1 mine by the Division of Oil Gas and Mining. Other seed mixes may be used upon recommendation by the BLM or the Division of Oil, Gas and Mining.

7.3 Vegetation Success Determination

Vegetation success is achieved when re-established vegetation is at least 70% of the pre-disturbed vegetation. Due to previous mining activities at the property and outcropping of limestone, vegetation did not exist over all areas. However, BR is proposing that revegetation is

considered successful when 70% ground cover is achieved based on comparison with the representative area described in Section 7.1. Successful revegetation is achieved when 25% (70% X 35%) ground cover is achieved over all reclaimed areas.

8.0 Depth to Groundwater, Geologic Setting

There is no data which provides an estimated depth to groundwater. There is no acid forming materials that will be created or used at the site. The only deleterious material to be used on the site is diesel fuel, which is stored in a tank placed in a lined pit. No impacts to groundwater are expected.

The geologic setting consist of predominant steep limestone outcropping. Clay seams separate various layers of limestone.

9.0 Proposed Location of Stockpiles

Only two stockpiles of appreciable amounts are to be located on site. One of these stockpiles will be a topsoil stockpile. The other stockpile will be the principal product, crushed limestone. The maximum area to be covered by all stockpiles combined will be within the operations area and would cover approximately one half acre.

10.0 Operation Practices

BR is not proposing any variances from operation practices listed in R647-4-107.

One small tank is used to provide diesel fuel to the crushing plant and for refueling of equipment. The area around the tank is bermed and lined to minimize impacts of any potential spills. A water storage tank is also present on the site.

11.0 Hole Plugging

There will be no exploratory drill holes or blast holes left on site to be plugged.

12.0 Impact Statement

12.1 Surface and Groundwater System Impacts

There is no data on groundwater elevations surrounding the Travertine #1 mine. However, there is no acid forming materials stored or formed at the site. The diesel fuel storage tank is surrounded by a bermed and lined pit. Observations on site and surrounding areas indicate that

storm water does not tend to pond because of the porosity of the soils and limestone outcroppings.

A storm water permit will be obtained from the Utah Division of Water Quality.

12.2 Wildlife Habitat and Endangered Species Impacts

There is minimal wildlife in the area. Mule deer, jack rabbits, and cotton tail rabbits exists in limited numbers in the area. There are no known threatened or endangered species in the area. The proposed BR operations are not expected to impact wildlife in any manner.

12.3 Existing Soil and Plant Resource Impacts

All top soils in the operations and pit area are to stockpiled and re-distributed. Soils outside of the disturbed areas would not be impacted by the BR operations.

There will be no permanent impacts to vegetation from the proposed operations. Revegetation will be re-established in the operations and pit area as described in Section 7.0. There are no plant resources outside of disturbed areas which will be affected by BR operations. There are no known threatened or endangered plant species in the area.

12.4 Impacts to Slope Stability, Erosion Control, Air Quality, Public Health and Safety

BR is proposing to regrade all slopes in the mining and operations area. The slopes are to be regraded to an approximate slope of 3:1 where possible to minimize the potential of erosion. There will be no highwalls left on site.

Air emissions from the operation are minimal due to the size and production of the operation. Processing operations are subject to permitting requirements by the Utah Division of Air Quality. Contractors which perform the processing operations are required by BR resources to have obtained the necessary air quality permits.

Public health and safety concerns are minimal. The total depth of the pit is very small with highwalls at a maximum of approximately 15 feet. The highwalls are protected with berms to the north and stockpiles to the south which minimize potential of accidental vehicular access to the highwalls. Highwalls will not exist following cessation of operations.

13.0 Reclamation Plan

13.1 Current Land Use and Post-mining Use

Pre-mining use of the subject and surrounding areas consisted of grazing and recreation. Upon cessation of BR activities, and re-establishment of vegetation, continuation of these activities would be available.

13.2 Reclamation of Roads, Highwalls, and Slopes

The utility road southwest of the pit and operations area is proposed for revegetation. Revegetation activities will consist of revegetating as described in Section 7.2.

The access road (the old county road) is not proposed for reclamation. This road existed prior to BR operations. Continued use of the road following BR operations is expected to continue for grazing purposes, recreational use, and for potential fire fighting activities.

There will be no highwalls left on site. The mining will consist of removing a limestone knob to a level consistent with existing terrain.

All slopes will be regraded to a slope of approximately 3:1 where possible. This slope approximates natural terrain up slope from operations, and is flatter than natural terrain down slope of operations. The proposed slope will minimize erosion potential, maximizing revegetation success.

There will be no post-mining water impoundments, leach pads, pits, or dumps for reclamation.

Proposed reclaimed slopes and revegetated areas are shown in Plate 2.

13.3 Removal of Surface Facilities

There will be no surface facilities left on site. All processing equipment and mining equipment will be removed from the site.

13.4 Revegetation Program and Topsoil Distribution

The proposed revegetation plan is described in detail in Section 7.2.

Dozer travel direction will take place parallel to surface contour to further minimize erosion potential.

No fertilization is proposed.

14.0 Surety

14.1 Gates and Signs

The mining plan consist of removal of a limestone outcropping. Highwalls are of minimal height during operations, and will not exist upon cessation of activities. Therefore no gates and/or signs are necessary.

14.2 Regrading - Loose Material

Nearly all loose material generated from operations will be sold. There is no reject material to be stockpiled. It is estimated that up to 500 yds of loose material will be available for regrading and used to form 3:1 or flatter slopes, where possible. The regrading of material would be completed with a dozer. All pushes would be less than 50'. The cost for regrading is estimated using the Means Construction Cost Data, reference 022-200-242-4000, at \$0.98 per yard. Note that this method of cost estimating includes an operator.

14.3 Distribution of Topsoil

Topsoil will removed from the topsoil stockpile and redistributed over the mined area and the portion of the operations area to be reclaimed (excluding access road). The topsoil distribution would be completed with a dozer, assumed to be a Caterpillar D8. The average push distance is estimated at 200'. The volume of topsoil to be redistributed is estimated at 2500 tons (2300 yds³). The cost of topsoil distribution is estimated using Caterpillar Blue Book Rental Rates, April 1997, and Means Construction Cost Data for operator cost, crew B-10-B. The estimated cost is \$0.84/yd³.

14.4 Mulch

Manure will be used as a mulch and to provide organic material. The manure will be applied at a rate of 4-5 tons per acre. The cost of manure is estimated to be negligible and expected to be available in nearby Leamington. It is estimated that the total cost for the manure and application will be \$30 per acre.

14.5 Seeding

Seeding will be completed using hand broadcasting. The total cost for the seed mix described in Section 7.2 is estimated at \$105 per acre. The seed mix may be hand broadcast at a rate of 1 acre per hour, at a cost of \$30 dollars per hour. The total cost is estimated at \$135 per acre.

14.6 Ripping

Ripping of seeded areas will be completed with a dozer. For surety estimates, it is assumed that ripping will be completed with Caterpillar D8. Using estimating parameters contained in Section 14.2, with an estimated ripping depth rubble at a depth of 18", at a rate of 1 mile per hour, the cost of ripping is estimated at \$224 per acre.

14.7 Dozer Mobilization

The only site equipment to be mobilized, which is not otherwise included in the unit cost, is the Caterpillar D8 dozer used for topsoil redistribution, regrading, and ripping. The dozer is expected to be available in nearby Nephi. A mobilization (including demob) cost of equipment is estimated at \$500.

14.8 Site Clean-up

Equipment removal. Equipment used for operations include an air track drill, a front end loader, and a crushing screening plant. For surety calculations, it is estimated that this equipment would have a salvage value equal to the disposal cost. No scrap iron value and no disposal fee is included in the surety estimates. The receiving scrap yard is assumed to be located in Nephi, with a round trip travel and unload time of 1 ½ hours. The load time for each trip is estimated at 1 hour. The total time needed for each vehicle trip is 2 ½ hours. The use of a flat bed tractor trailer with operator is estimated at \$40 per hour. A front end loader would be used to load all scrap equipment and all equipment left on site could be loaded and hauled in two working days. Supervision could be completed by the front end loader operator. This same loader with supervisor would be used for general debris clean-up during slack periods.

The air track and a front end loader would each take one trip (2 trips total), for a total of 5 hours.

The crushing/screening operations are conducted by a contractor. Exact plant layouts could vary. However, a typical plant layout consists of: generator/operator shack (1 trip); a cone crusher (1 trip); a jaw crusher (1 trip); a screening plant (1 trip); six conveyors/radial stackers (2 trips), a water storage tank and a diesel fuel storage tank (1 trip); and a feeder/hopper (1 trip). The total effort needed to remove the crushing/screening plant is eight trips or 20 hours.

General site clean-up. All trash and general debris will be removed from the site. This site clean-up can be completed by supervised labor and a front end loader. It is estimated that site clean-up can be completed within one work day, and the laborers could be supervised by the loader operator. The loader with supervisor would be the same as that used for equipment loading and could complete general site clean-up during periods when a truck is not available to load. The labor cost is estimated at \$30 per hour, and that two laborers could complete the clean-up in two working days.

14.9 Loader Operation

A loader may be used for general site clean-up and for equipment/scrap loading. The loader may also be used to assist in topsoil redistribution. It is estimated that all work needed to be completed with a loader could be done in two days. Loader costs are based on Means Construction Handbook. The method of estimating included operator costs, and mobilization, at a cost of \$897.50 per day.

14.10 Total Surety Estimate

Calculation for total surety is included in detail in Table 14.1. All calculations are made assuming a third party contractor performs the necessary work. References for the cost of each line item are provided.

TABLE 14.1
BR SURETY ESTIMATES

Item	Subgroup	1996 Reference	1998 Unit Cost	Cost Unit per	Variable 1	Variable 1 Units	1998 Cost
Regrading	Pit and operation areas	Means, 022-200-242-4000	\$0.98	yd3	500	yd3	\$490
Topsoil distribution	Pit and operation areas	NOI Section 14.3	\$0.84	yd3	2300	acre	\$1,932
Ripping	Pit, operation area, and utility road	NOI Section 14.6	\$224.00	acre	7.63	acre	\$1,709
Mulch	Pit, operation area, and utility road	NOI Section 14.4	\$30.00	acre	7.63	acre	\$229
Seeding	Seeding (seed cost plus application)	NOI Section 14.5	\$135.00	acre	7.63	acres	\$1,030
Cleanup	General Site Cleanup Equipment Salvage Trucking FEL with Supervisor	NOI Section 14.8 NOI Section 14.8 Means, 016-400-408-4760	\$30.00 \$40.00 \$897.50	hour hour day	32 25 2	Hours hours days	\$960 \$1,000 \$1,795
Dozer Mobilization (demob included)	Miscellaneous Supervision	NOI Section 14.6	\$500.00	lump			\$500
Escalation estimated for a five year period at a rate of 2.24%							
Subtotal							\$9,645
Add 10% cont							\$10,610
Escalation Rounded							\$11,852
							\$11,900

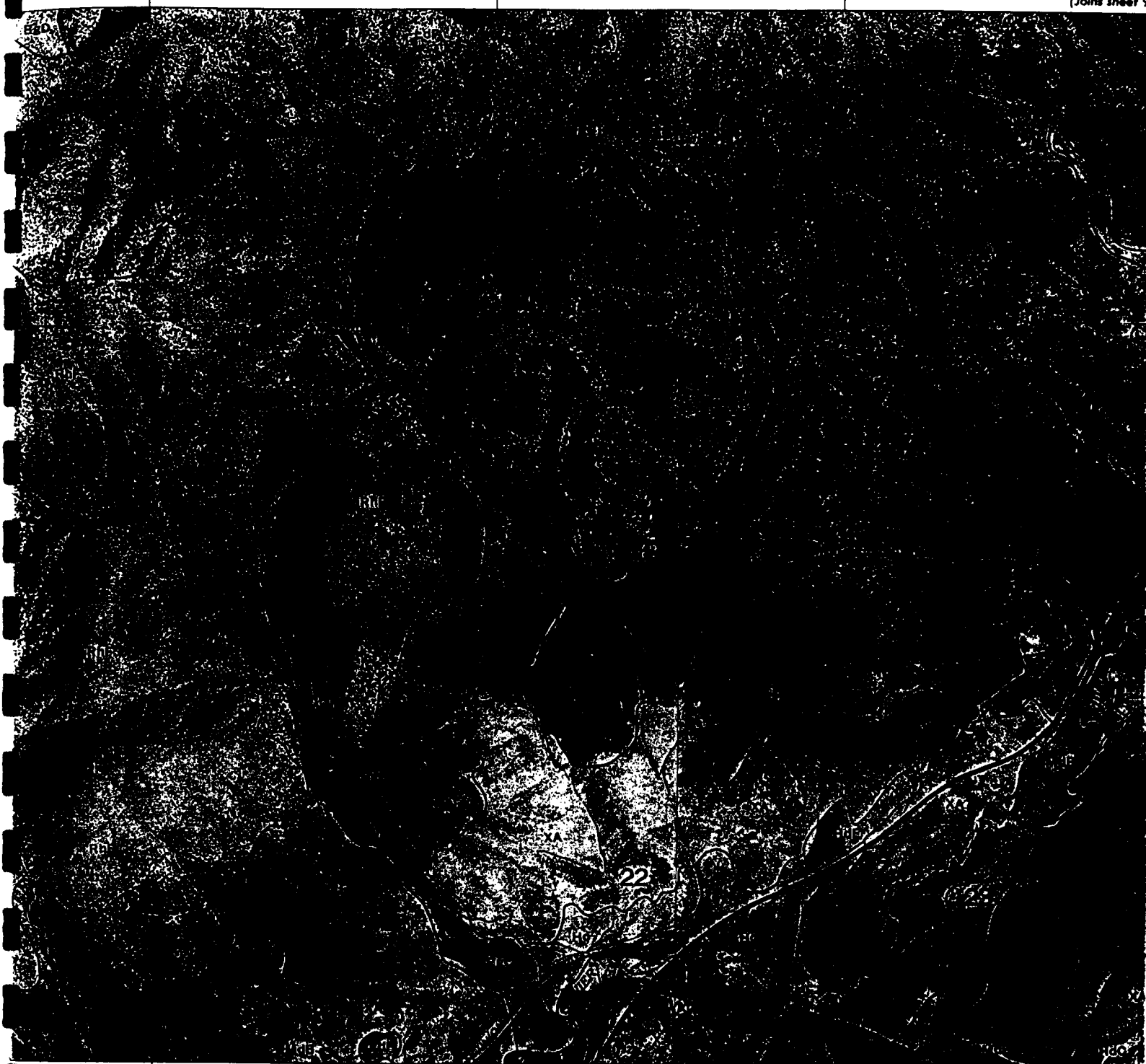
Appendix A

Location Map

Appendix B

Soils, Geology, Aerial Photograph

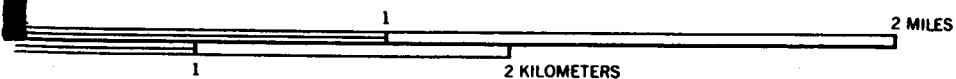
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SCALE 1:24000

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is a capital if the mapping unit is broadly defined; otherwise it is a small letter. The third letter, always a capital A, B, C, D, E, or F, shows the slope. Slope letters are omitted from the symbol on broadly defined units, miscellaneous areas and on nearly level mapping units. A numeral 2 is used following the slope designation on those mapping units that are eroded. The letter P is used following the slope designation on those mapping units that are hummocky as a result of wind action.

SYMBOL

NAME

SYMBOL

NAME

AaF Agassiz very stony loam, 30 to 70 percent slopes
 AbF Agassiz-Rock outcrop complex, 30 to 70 percent slopes
 AcE Amfott Rock outcrop complex, 8 to 30 percent slopes
 AcF Amfott Rock outcrop complex, 30 to 70 percent slopes
 AdE Amfott, most Rock outcrop complex, 8 to 30 percent slopes
 AdF Amfott, most Rock outcrop complex, 30 to 70 percent slopes
 AeD Ant Flat loam, 8 to 15 percent slopes
 AF Aquic Ustifluvents, saline
 AG Argic Pachic Cryoborolis, rolling
 AHA* Ashdown loam, 0 to 2 percent slopes
 AHb* Ashdown loam, 2 to 4 percent slopes
 AHA* Ashdown loam, moist, 0 to 2 percent slopes
 AHb* Ashdown loam, moist, 2 to 4 percent slopes
 AME Aleptic shaly loam, 10 to 40 percent slopes
 BA Beaches
 Bb Benjamin silty clay loam
 Bc Benjamin silty clay loam, moderately saline alkali
 BbD Bezzant gravelly loam, 6 to 30 percent slopes
 BbF Bezzant gravelly loam, 30 to 60 percent slopes
 BbD Bezzant gravelly loam, dry, 6 to 30 percent slopes
 BbF Bezzant gravelly loam, dry, 30 to 60 percent slopes
 Bb* Burdock loam
 BbC Borvant cobbly loam, 2 to 8 percent slopes
 BbD Borvant cobbly loam, 8 to 25 percent slopes
 BbH Borvant Reywat complex, 8 to 30 percent slopes
 BbF Borvant Reywat complex 30 to 60 percent slopes
 BbE Borvant Sandall complex, 8 to 60 percent slopes
 BbM Bramwell silt loam
 BbD Broadhead loam, 3 to 25 percent slopes
 BbF Broadhead loam, 25 to 70 percent slopes
 Cab* Calita loam, 2 to 4 percent slopes
 CAd* Calita loam, 4 to 8 percent slopes
 CAd Calita loam, 8 to 15 percent slopes
 CbF Calpac Agassiz complex, 30 to 70 percent slopes
 CcF Calpac Lundy complex, 30 to 70 percent slopes
 CdE Checkert, most Rock outcrop complex, 8 to 40 percent slopes
 Ce* Cheebe fine sandy loam
 CI Cheebe silty clay loam
 CG Cumulic Haploserolis, sloping
 DaC* Dagor loam, 2 to 8 percent slopes
 Dbd Deer Creek cobbly loam, 6 to 25 percent slopes
 Dcd Deer Creek-Borvant complex, 2 to 25 percent slopes
 Ddd Donnarso stony loam, 2 to 8 percent slopes
 Dde Donnarso stony loam, 8 to 25 percent slopes
 Dde Donnarso stony loam, 25 to 40 percent slopes
 Dde Donnarso Hiko Peak complex, 25 to 40 percent slopes
 DdbC Doyle loam, 2 to 4 percent slopes
 DdbC Doyle loam, 4 to 8 percent slopes
 DdbC Doyle silt loam, loamy substratum, 2 to 4 percent slopes
 DdbD Dry Creek cobbly loam, 4 to 15 percent slopes
 DdbD Dry Creek Reebok complex, 4 to 15 percent slopes
 Ddb Duggins loam
 Ddb Dune land
 FbF Firmege gravelly loam, dry, 2 to 4 percent slopes
 FbF Firmege loam, 30 to 70 percent slopes
 FbF Firmege-Parkay-Rock outcrop complex, 30 to 70 percent slopes
 FbF Firmege-Starley association, very steep
 FbD Fontreen stony loam, 3 to 25 percent slopes
 FbF Fontreen stony loam, 25 to 60 percent slopes
 FbD Fontreen-Borvant complex, 2 to 25 percent slopes
 FbB Freedom silt loam, 0 to 2 percent slopes
 FbC* Freedom silt loam, 2 to 5 percent slopes
 FbB Fredlo loam, 2 to 4 percent slopes
 GAAP* Genola fine sandy loam, hummocky
 GbA* Genola silt loam, 0 to 1 percent slopes
 GbB* Genola silt loam, 1 to 2 percent slopes
 GbC* Genola silt loam, 2 to 5 percent slopes
 GbA* Genola silt loam, moist, 0 to 1 percent slopes
 GbB* Genola silt loam, moist, 1 to 2 percent slopes
 GbC* Genola silt loam, moist, 2 to 5 percent slopes
 GbD* Goldrun loamy fine sand, 0 to 10 percent slopes, hummocky
 GbD Goldrun Cheebe complex, 0 to 10 percent slopes
 GbD Goldrun-Meriburn complex, 0 to 10 percent slopes
 GbE Goldrun Rock outcrop complex, 0 to 10 percent slopes
 HbF Hamtah loam, 30 to 70 percent slopes
 HbA Hansel silt loam, 0 to 2 percent slopes
 HbB Hansel silt loam, 2 to 4 percent slopes
 HbC Harding silt loam
 HbC Hiko Peak stony sandy loam, 4 to 8 percent slopes
 HbD Hiko Peak stony sandy loam, 8 to 15 percent slopes
 HbE Hiko Peak stony sandy loam, 15 to 25 percent slopes
 HbC Hillfield silt loam, 2 to 5 percent slopes
 HbC Hupp gravelly loam, 4 to 8 percent slopes
 HbD Hupp gravelly loam, 8 to 15 percent slopes
 JbD Jericho gravelly fine sandy loam, 4 to 15 percent slopes
 JbA* Juab loam, 0 to 2 percent slopes
 JbB* Juab loam, 2 to 4 percent slopes
 JbC* Juab loam, gravelly substratum, 2 to 4 percent slopes
 JbC* Juab loam, gravelly substratum, 4 to 8 percent slopes
 JbC* Juab complex, 4 to 8 percent slopes
 JbD Justesen loam, 4 to 15 percent slopes
 KbF Kingley silt loam, dry, 0 to 2 percent slopes
 KbB Kirkham silt loam
 KbC Kitchell Rock outcrop complex, 30 to 70 percent slopes
 LAa* Linzyer very fine sandy loam, 0 to 1 percent slopes
 LAa* Linzyer very fine sandy loam, 1 to 2 percent slopes
 LAa* Linzyer very fine sandy loam, 2 to 5 percent slopes
 LAa* Linzyer very fine sandy loam, 5 to 10 percent slopes, eroded
 LAa* Luzzant very cobbly loam, 8 to 30 percent slopes
 LAa* Luzzant very cobbly loam, 30 to 60 percent slopes
 LAa* Luzzant very cobbly loam, dry, 30 to 60 percent slopes
 LAa* Lottar Rock outcrop complex, 3 to 30 percent slopes
 LAa* Lottar Rock outcrop complex, 30 to 70 percent slopes
 LAa* Lundy Rock outcrop complex, 30 to 70 percent slopes
 LAa*

MaB Manassa silt loam, 0 to 2 percent slopes
 MbC2 Manassa silt loam, 2 to 5 percent slopes, eroded
 MbC Manassa silt loam, moderately saline, 0 to 2 percent slopes
 MbB Manassa Mellor silt loam, 0 to 2 percent slopes
 MaC Manila loam, 4 to 8 percent slopes
 MaD Manila loam, 8 to 15 percent slopes
 MIA* Medburn fine sandy loam, 0 to 2 percent slopes
 MIB* Medburn fine sandy loam, 2 to 4 percent slopes
 Mg Mellor silt loam
 Mh Mellor silt loam, wet
 MhC Modoc fine sandy loam, cool, 4 to 8 percent slopes
 Mh* Morson silty clay loam
 MhF Mortenson silt loam, 40 to 70 percent slopes
 MoC Mountaineer very stony sandy loam, 3 to 10 percent slopes
 MoB Mountaineer gravelly loam, sandy substratum, 2 to 4 percent slopes
 MrB Mountaineer, sandy substratum Doyle complex, 2 to 4 percent slopes
 MaD Mower clay loam, 5 to 15 percent slopes
 MhC Mower Rock outcrop complex, 30 to 50 percent slopes
 MuB* Musina silt loam, 0 to 2 percent slopes
 MuC* Musina silt loam, 2 to 5 percent slopes
 MuB* Musina silty clay loam, moist, 0 to 2 percent slopes
 MuC* Musina silty clay loam, moist, 2 to 5 percent slopes
 NaB Nephi silt loam
 OaD Orcky gravelly fine sandy loam, 4 to 15 percent slopes
 OaE Orcky gravelly fine sandy loam, 15 to 40 percent slopes
 PA Pacific Calcirolois, very steep
 PB Pacific Calcirolois, steep
 PC Pacific Cryoborolis, sloping
 PD Pacific Cryoborolis, north slopes
 PeD Parkay-Rock outcrop complex, 8 to 30 percent slopes
 PeF Parkay-Rock outcrop complex, 30 to 70 percent slopes
 PhA* Parleys loam, 0 to 2 percent slopes
 PhB* Parleys loam, 2 to 4 percent slopes
 PhC* Parleys loam, 4 to 8 percent slopes
 PhC Pharo very stony loam, 3 to 10 percent slopes
 PhD Pibler gravelly fine sandy loam, 4 to 15 percent slopes
 PK Pits Dumps complex
 PmD Pober fine sandy loam, 4 to 15 percent slopes
 PmD Pober Pibler complex, 4 to 15 percent slopes
 Pp Provo Bay silt loam
 Pp Provo Bay-Cheebe complex
 RaD Reebok cobbly loam, 4 to 15 percent slopes
 RaE Reebok cobbly loam, 15 to 40 percent slopes
 RaD Renal stony fine sandy loam, 4 to 8 percent slopes
 RaD Renal Reebok complex, 4 to 15 percent slopes
 ReE Reebok Rock outcrop complex, 10 to 30 percent slopes
 ReE Reebok Rock outcrop complex, 10 to 30 percent slopes
 ReF Reebok Rock outcrop complex, 30 to 60 percent slopes
 ReF Rock outcrop
 RbF Rock outcrop Amfott complex, 30 to 70 percent slopes
 RbF Rock outcrop Lottar complex, 30 to 70 percent slopes
 RbF Rock outcrop Lundy complex, 30 to 70 percent slopes
 RbF Rock outcrop Sasby complex, 30 to 70 percent slopes
 RbF Rock outcrop Sheep Creek complex, 30 to 70 percent slopes
 RbD Roddis gravelly clay loam, 4 to 15 percent slopes
 Rb Roddis-Somes silt loam
 RS Rubble land
 Sa Seltair silt loam
 SbF Seltair very cobbly loam, 25 to 60 percent slopes
 ScD Sanpete gravelly fine sandy loam, 4 to 15 percent slopes
 ScF Sanpete gravelly fine sandy loam, 15 to 40 percent slopes
 SeE Sasby Rock outcrop complex, 10 to 30 percent slopes
 SeF Sasby Rock outcrop complex, 30 to 70 percent slopes
 SeB Sasby, most Rock outcrop complex, 10 to 30 percent slopes
 SeF Sasby, most Rock outcrop complex, 30 to 70 percent slopes
 SeD Shabbliss very fine sandy loam, 2 to 5 percent slopes
 SeD Shabbliss very fine sandy loam, 5 to 15 percent slopes
 SeD Shabbliss very fine sandy loam, 15 to 30 percent slopes
 SeC Shabbliss very fine sandy loam, moist, 2 to 5 percent slopes
 She Sheep Creek very cobbly loam, 10 to 30 percent slopes
 She Sheep Creek very cobbly loam, 30 to 70 percent slopes
 She Sheep Creek very cobbly loam, dry, 30 to 70 percent slopes
 She Sheep Creek-Figars complex, 8 to 30 percent slopes
 Sd Sickens
 SoD Soager gravelly loam, 4 to 15 percent slopes
 SoE Starley Rock outcrop complex, 8 to 30 percent slopes
 SoF Starley Rock outcrop complex, 30 to 70 percent slopes
 SeF Summe very cobbly loam, 10 to 30 percent slopes
 SeF Summe Reebok Rock outcrop complex, 10 to 30 percent slopes
 SeF Summe Reebok Rock outcrop complex, 30 to 60 percent slopes
 TaA* Taylorsville silt loam, 0 to 2 percent slopes
 TaB* Taylorsville silt loam, 2 to 4 percent slopes
 TaC* Thokol silt loam, dry, 0 to 2 percent slopes
 TbD Thokol silt loam, moist, 0 to 2 percent slopes
 TeC* Truesdale fine sandy loam, 2 to 4 percent slopes
 TbD Typic Cryoborolis, moderately sloping
 Tf Typic Haploborolis, steep
 WaB* Wales loam, 2 to 4 percent slopes
 WbB* Wallsburg Rock outcrop complex, 25 to 70 percent slopes
 WcF Wallsburg Yeates Hollow complex, 25 to 40 percent slopes
 WdF Wallsburg Yeates Hollow complex, 40 to 70 percent slopes
 W Water
 We Woodrow loamy fine sand
 WIA* Woodrow silt loam, 0 to 1 percent slopes
 WIF* Woodrow silt loam, 1 to 2 percent slopes
 WIF* Woodrow silt loam, 2 to 5 percent slopes
 XA Xeric Tarrontheis, steep
 XB Xeric Tarrontheis Rock outcrop complex, steep
 YaC Yeates Hollow stony loam, 6 to 10 percent slopes
 YaD Yeates Hollow very stony loam, 10 to 25 percent slopes
 YaD Yeates Hollow very stony loam, 10 to 25 percent slopes
 YaF Yeates Hollow very stony loam, 25 to 40 percent slopes
 YbF Yeates Hollow very stony loam, 40 to 70 percent north slopes

* Indicates mapping units that are considered prime farm land in Utah. These soils are all irrigated.

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the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

Typically, the surface layer is brown cobbly loam about 9 inches thick. Below this to a depth of 60 inches or more is very strongly calcareous, pale brown very cobbly loam.

Included in this unit are about 5 percent Rock outcrop and 5 percent Bezzant gravelly loam, 6 to 30 percent slopes; 5 percent Lizzant very cobbly loam, 30 to 60 percent slopes; and 2 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides. Borvant cobbly loam, 8 to 25 percent slopes, on alluvial fans, also makes up 5 percent of the unit. The percentage of these inclusions varies from one area to another.

Permeability of this Lizzant soil is moderate. Available water capacity is about 5.5 to 7 inches. Water supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on this soil is about 65 percent perennial grasses, 15 percent forbs, and 20 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, antelope bitterbrush, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 900 pounds per acre.

Slope limits access by livestock and results in overgrazing of the less sloping areas.

This unit is very poorly suited to range seeding. The main limitations of the soil are slope and the content of rock fragments.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness and slope.

This map unit is in capability unit VII_s-UX, nonirrigated. The range site is Upland Stony Loam.

LdE—Lodar-Rock outcrop complex, 3 to 30 percent slopes. This map unit is on hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 60 percent Lodar very cobbly loam, 3 to 30 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Lodar very cobbly loam, 30 to 70 percent slopes, on hillsides, and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 5 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans. The percentage of the included soils varies from one area to another.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, the surface is grayish brown very cobbly loam about 10 inches thick. The underlying material is pale brown very stony, about 5 inches thick. Limestone is at a depth of 10 to 20 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Lodar soil is moderate. Available water capacity is about 1 inch to 1.5 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 2 to 5 percent. Runoff is medium and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren limestone mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Lodar is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Management practices needed to maintain or improve the vegetation include proper grazing use, proper seasonal use, good water distribution, and a planned grazing system. Dense stands of sagebrush may develop as a result of continuous overgrazing. Brush management by prescribed burning or by chemical treatment and proper grazing use can improve the range. Deteriorated range if at least 15 percent of the desirable plants still remain.

This unit is poorly suited to range seeding. The main limitation is depth to rock.

This unit is poorly suited to recreational uses and homesite development. The main limitations are stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VII_s-U3, nonirrigated. The range site is Upland Shallow loam.

LdF—Lodar-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hillsides. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs. Elevation is 4,800 to 6,400 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

This unit is about 60 percent Lodar very cobbly loam, 30 to 70 percent slopes, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 10 percent Lodar very cobbly loam, 3 to 30 percent slopes, on hillsides, and 5 percent Borvant cobbly loam, 8 to 25 percent slopes, and 5 percent Donnardo stony loam, 8 to 25 percent slopes, on alluvial fans. The percentage of the included soils varies from one area to another.

slopes, on alluvial fans. The percentage of these included soils varies from one area to another.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, the surface layer is grayish brown very cobbly loam about 10 inches thick. The underlying material is pale brown very stony loam about 5 inches thick. Limestone is at a depth of 15 inches. Depth to limestone bedrock ranges from 10 to 20 inches.

Permeability of the Lodar soil is moderate. Available water capacity is about 1 to 1.5 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 4 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat.

The potential plant community on the Lodar soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Nevada ricegrass, and Indian ricegrass. The normal expected yield of total air-dried herbage is about 650 pounds per acre.

Because of the steepness of slope and the shallow depth of soil, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are steepness of slope, stoniness, shallow depth to bedrock, and Rock outcrop.

This map unit is in capability unit VIIc-U3, nonirrigated. The range site is Upland Shallow Loam.

LF—Lundy-Rock outcrop complex, 30 to 70 percent slopes.

This map unit is on mountainsides and ridges. Slopes are long and convex. In most areas the present vegetation is mainly grasses and shrubs.

Elevation is 5,600 to 8,100 feet. The average annual precipitation is 14 to 18 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free season is 70 to 110 days.

This unit is about 60 percent Lundy very cobbly loam, 20 to 70 percent slopes, and 20 percent Rock outcrop. Components of this unit are so intricately mingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Atepic shaly loam, 10 to 40 percent slopes; 5 percent Lizzant very cobbly loam, 8 to 30 percent slopes; and 5 percent Borvant cobbly loam, 30 to 70 percent slopes, on alluvial fans. Borvant cobbly loam, 8 to 25 percent slopes, also makes up five percent of this unit. The percentage of these included soils varies from one area to another.

The Lundy soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone and sandstone. Typically, the surface layer is dark brown very cobbly loam about 6 inches thick. The underlying material is pale brown and brown very cobbly loam about 13 inches thick. Limestone is at a depth of 19 inches. Depth to limestone ranges from 10 to 20 inches.

Permeability of the Lundy soil is moderate. Available water capacity is about 1 inch to 2 inches. Water supplying capacity is 2 to 4 inches. Effective rooting depth is 10 to 20 inches. The organic matter content of the surface layer is 1 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

This unit is used as rangeland and for wildlife habitat (fig. 10).

The potential plant community on the Lundy soil is about 65 percent perennial grasses, 3 percent forbs, 7 percent shrubs, and 25 percent trees. Important plant species are bluebunch wheatgrass, Utah juniper, Indian ricegrass, and black sagebrush. The normal expected yield of total air-dried herbage is about 1,500 pounds per acre.

Because of the steepness of slopes and shallow depth to bedrock, grazing management practices are poorly suited to this unit.

This unit is poorly suited to recreational uses and homesite development. The main limitations are slope, stoniness, shallow depth to bedrock, and Rock outcrop.

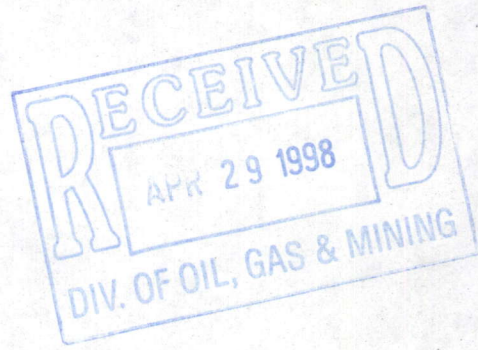
This map unit is in capability unit VIIc-U3J, nonirrigated. The range site is Upland Shallow Loam (Juniper).

MaB—Manassa silt loam, 0 to 2 percent slopes.

This very deep, well drained soil is on alluvial fans and lake terraces. The soil formed in alluvium and lake sediment derived dominantly from shale, limestone, and sandstone. Slopes are long and convex or concave. In most areas the present vegetation is mainly salt-tolerant grasses and shrubs. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free season is 100 to 140 days.

Typically, the surface layer is saline, pale brown silt loam about 15 inches thick. Below this to a depth of 60 inches or more is very strongly saline, very pale brown silty clay loam.

Included in this unit are about 5 percent Manassa silt loam, 2 to 5 percent slopes, eroded, on alluvial plains, and 5 percent Woodrow silt loam, 1 to 2 percent slopes, on lake plains. Three percent of the map unit is Mellor silt loam, 0 to 2 percent slopes, and 2 percent is Harding silt loam. Both soils are on lake terraces. The percentage of these included soils varies from one area to another.



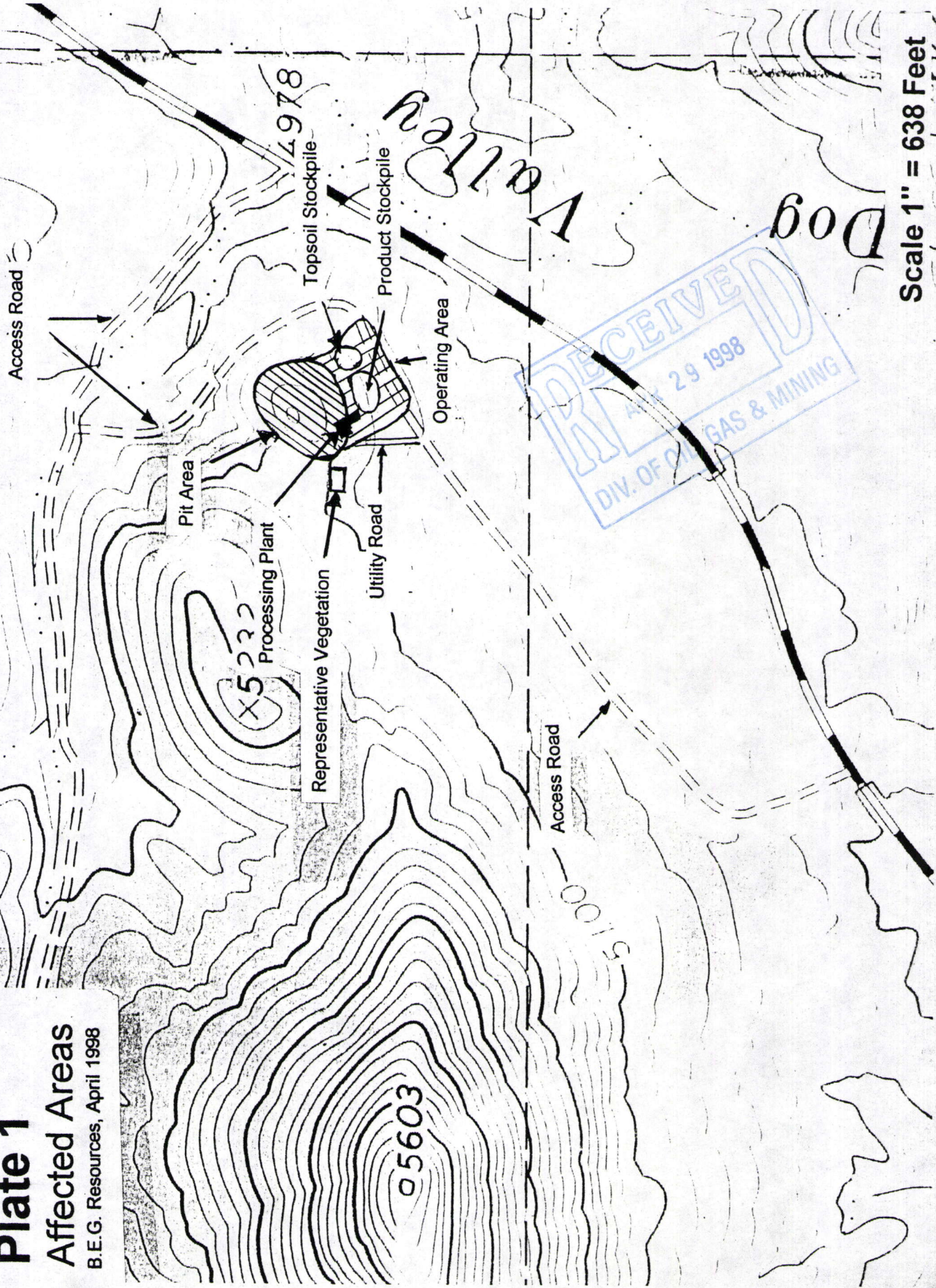
Plates

Plate 1 - Affected Areas

Plate 2 - Reclaimed Areas

Plate 1
Affected Areas
B.E.G. Resources, April 1998

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Scale 1" = 638 Feet

Plate 2

Reclaimed Areas

B.E.G. Resources, April 1998

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